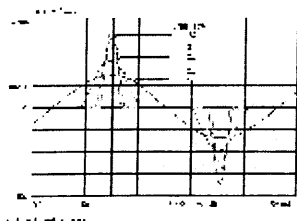


MIL-STD 705C Military Generator Test Procedures



Generators are considerably more complex than most people believe, especially the larger ones that are made more rugged for military use. The following are tests typically used to validate the performance of military generators. Naturally, not all of the tests below are required or used in developing, testing and validating military generators. This is a comprehensive list, from which required tests are extracted on a case-by-case basis.

Tests and Procedures

TEST NO.	METHOD
301.1c	Insulation resistance test
302.1b	High potential test
401.1b	Winding resistance test
410.1b	Open circuit saturation curve test
411.1b	Synchronous impedance curve test
412.1b	Zero power factor saturation curve test
413.1b	Rated load current saturation curve test
414.1c	Rotating exciter saturation curve test (constant resistive load)
415.0b	Summation of losses test
415.1c	Generator power input test
416.1b	Brush potential curve test
420.1b	Short circuit ration test
421.1b	Direct-axis synchronous reactance test
422.1b	Negative sequence reactance and impedance test
423.1b	Zero-sequence reactance test
424.1b	Quadrature-axis synchronous reactance test
425.1b	Direct-axis transient reactance test

426.1b	Direct-axis subtransient reactance test
427.1b	Direct-axis transient short-circuit time constant test
428.1b	Direct-axis subtransient short-circuit time constant test
430.1a	Direct-axis transient open-circuit time constant test
432.1b	Short-circuit time constant of armature winding test
503.1c	Start and stop test
503.2c	Start and stop test (remote control)
503.3a	Start and stop test (remote cubicle)
504.2b	Torsiographing tests
505.1b	Over speed test (set)
505.2b	Over speed protective device test
505.3c	Over speed test (generator only)
506.1b	Under speed protective device test
507.1d	Phase sequence test (rotation)
508.1d	Phase balance test (voltage)
509.1b	Circulating current test
510.1d	Rheostat range test
511.1d	Regulator range test
511.2c	Frequency adjustment range test
512.1d	Circuit interrupter test (short circuit)
512.2d	Circuit interrupter test (overload current)
512.3d	Circuit interrupter test (over voltage and under voltage)
513.1d	Indicating instrument test (electrical)
513.2a	Indicating instrument test (production sets) electrical)
515.1b	Low oil pressure protective device test
515.2b	Over temperature protective device test
515.5a	Low fuel protective device test
516.1a	Controls, direction of rotation
516.2a	Reverse power protective device test
516.5a	Reverse battery polarity test
521.1a	Paralleling aid device test

601.1d	Voltage waveform test (oscillographic)
601.4b	Voltage waveform test (harmonic analysis)
601.5	Voltage waveform test (deviation factor)
602.1b	Voltage modulation test
608.1a	Frequency and voltage regulation stability and transient response test (short term)
608.2a	Frequency and voltage stability test (long term)
610.1b	Voltage and frequency droop test
611.1b	Inherent voltage droop test
614.1b	Voltage and frequency regulation test (for generator sets)
615.1b	Inherent voltage regulation test
619.1d	Voltage dip for low power factor loads test
619.2c	Voltage dip and rise for rated load test
620.1b	Voltage unbalance with unbalance load test (line to neutral load)
620.2b	Voltage unbalance with unbalance load test (line to line)
620.4b	Voltage unbalance test (three wire, single phase)
621.1b	Unbalance load heating test
625.1d	Short circuit test (mechanical strength)
630.1d	Parallel operation test
640.1d	Maximum power test (for gasoline and diesel generator sets)
640.2d	Maximum power test (determination of requirements for production sets)
640.4a	Maximum power test for gas and diesel gen. sets (production sets)
650.1b	Ripple voltage test
651.1d	Judging of commutation test (AC sets)
651.2d	Judging of commutation test (DC sets)
652.1b	Shaft current test
655.1a	DC control test
660.1d	Inclined operation test
661.2c	Sound level tests
670.1b	Fuel consumption test
680.1c	Temperature rise test (generator only)
680.2b	Temperature rise test (alternate loading method)

690.1d	Endurance test
695.1a	Reliability test
701.1d	Starting and operating test (extreme cold battery start)
701.2d	Starting and operating test (moderate cold battery start)
701.3c	Starting and operating test (extreme cold, manual crank)
701.4c	Starting and operating test (moderate cold, manual cranks)
702.1c	Standby operation test (extreme cold)
710.1d	High temperature test
711.1d	Humidity test
711.2b	Fungus resistance test
711.3c	Rain test
711.4b	Sand and dust test
711.5b	Salt fog test
711.6b	Immersion test
720.1d	Altitude operation test
731.1c	Storage test (extreme cold, -80deg F)
732.1c	Storage test (extreme hot, 160 deg F)
740.1c	Vibration test
740.2c	Drop test (free fall)
740.3c	Drop test (ends)
740.4c	Lifting and towing test
740.5c	Railroad impact test
740.7a	Forklift handling test
750.1c	Fuel lift test
760.2c	Winterization test
770.1c	Rectifier test
771.1a	Load bank test

Note:

For additional information on copies of tests, and procedures please contact Mobile Electronic Power Project Engineers.